Standards of Public Land Health
Evaluation of 65065 UNDER THE HILL Allotment
[10/05/2010]

The Roswell Field Office conducted (RHA) Rangeland Health Assessments at 2 study sites within Under The Hill, allotment #65065. These assessments evaluated Soil/Site Stability, Hydrologic Function and Biotic Integrity indicators within the vicinity of each study site. Existing monitoring data and Ecological Site Descriptions were incorporated into and in support of these field assessments. A summary of each assessment is attached and shown in the following table.

Study Area or Assessment Area	UPLAND			BIOTIC			RIPARIAN		
	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet	Meets	Monitor an Indicator	Does Not Meet
65065-SAND WELL #2-D112	X			X			N/A		
65065-SOUTH TRAP-D111 (*)	X			X	*		N/A		

Twenty-two (22) indicators for Rangeland Health were evaluated for public land on Under The Hill, allotment #65065. Ten (10) of these assessed soil site stability, 11 hydrologic function and 13 assessed biotic integrity. These qualitative assessments in conjunction with previous data collected and ecological site descriptions, at 2 range trend plot study locations within this allotment were utilized to make rangeland health determinations. Quantitative evaluations are performed by the Roswell Field Office, which include some or all of the following; ground and vegetative cover and composition, production, frequency and ecological condition. These collections which were initiated in the late 1970's/early 1980's, are scheduled and conducted approximately every 5 years.

This allotment is currently permitted for 85 AU's for 717 AUM's @70% public land use. Cattle and horses are the class of livestock authorized. Public land acreage within the Sand Well #2 Pasture is 4,631 acres on a CP-2 Sand Hills ecological site. The soil phase is Roswell-Jalmar (Rn) complex fine sand on high hilly terraces in the eastern parts of survey area. Slopes are 0-25 percent with elevation between 3,900 ft to 4,100 ft deep and well-drained formed in aeolian and alluvial sediments on uplands. Roswell soil is found in billowy areas of deep sand, gently undulating, noncalcareous and neutral. Jalmar soil is level to nearly level with a noncalcareous soil profile to the substratum and moderately alkaline.

A moderate level of use by cattle was observed at evaluation for Sand Well #2. The majority of indicators assessed rated None to Slight and Slight to Moderate with normal range of variability. Moderate departure was recorded for functional/structural groups. Shinnery oak (Quercus havardii) dominates the shrub component and has consistently scored high in composition, ie,

65-75% of the total biomass over the last several years. Both sand bluestem (Andropogon hallii) and little bluestem (Schizachyrium scoparium) are down from previous observations. Forbs are abundant, especially annual buckwheat (Eriogonum spp.) and spectacle-pod (Dithyrea wislizenii).

South Trap Pasture is a CP-2 Sandy Loam ecological site on 1,492 acres public land. Soil phase is Ima (Im), fine sandy loam, deep and well-drained, formed in alluvial fans with 1-5% slope. Elevation is 4,000 ft to 4,100 ft. This soil occurs in the eastern part of area surveyed on alluvial fans below High Plains breaks. This soil profile is moderately, and strongly calcareous in surface, upper and lower layers respectively, and is mildly alkaline throughout. Again, moderate livestock use was noted.

Reproductive capability of perennials has been influenced by reduction in grass and favorable shrubs. The dynamics taking place here can be attributed to a shift from a grassland complex to strictly shrubland with no other underlying vegetation.

Infiltration rates have been greatly affected. Plant community composition and distribution relative to infiltration and runoff rates Moderate to Extreme. Major plant cover changes from fibrous rooting to tap rooted have occurred. Both these compositional and distributional changes in plant cover currently inhibit infiltration and increase overland water flow in this area. Mesquite and snakeweed have replaced those graminoid groups; dropseeds (Sporobolus spp.) and gramas (Bouteloua spp.). Threeawns (Aristida spp.) have also replaced those decreaser groups leading to Moderate to Extreme indicator ratings for functional/structural groups.

Annual production rates Slight to Moderate. The higher number of mesquite plants noted lead to a Moderate to Extreme rating for invasive plants. Other less noticeable species encountered are grasses bristlegrass (Setaria macrostachya), bush muhly (Muhlenbergia porteri) and shrub, sand sage (Artemisia filifolia).

The allotment has been reduced recently, two pastures that had been associated with the allotment had been pulled out of the allotment. Allocated use on the allotment has been reduced from 167 AUs (9.71 head/section) to 85 AUs or 6.11 head per section. It is recommended that the mesquite treatment that occurred be assessed again in 2 years. If the treatment is found not be effective, then pretreatment conditions should be reviewed.

Wildlife: Evaluation of the integrity of biotic community considered several indicators as attribute indices for the area of interest. Biotic indicators are interrelated with several other indicators, including soil/site stability, hydrologic function, and vegetation. Several indicators are singularly biotic and address the vegetative aspect of the ecological site description, such as functional/structural groups and plant mortality & decadence.

For Sand Wells #2 Pasture, wildlife habitat and populations are good for deer and pronghorn and fair for quail (Callipepla spp.). Special status species habitat rated Slight to Moderate as lesser prairie chicken (Tympanuchus pallidicinctus) habitat is limited by a reduced level of nesting cover; bluestem that was present offered minimal residual cover or clumps. Special status species populations also rated at Slight to Moderate as these LPC populations are not present, or limited.

Potential habitat for this species is present however although no recent surveys have been conducted.

South Trap Pasture: wildlife habitat and populations rate Slight to Moderate. No pronghorn habitat exists here because of thick mesquite. Deer cover here is good but is low in forb and browse species. Deer use those corridors in which to traverse through this pasture. Quail and deer populations are fair and recovering. The western half of the South Trap Pasture is potential habitat, however, no recent surveys have been conducted.

In the professional opinion of Assessment Team, public land within Under The Hill, allotment #65065, meets the Upland and Biotic Standards however the Biotic Standard should be monitored. There are no Riparian issues within this allotment, therefore this Standard was not addressed. See site notes and recommendations for additional information regarding the assessments within this allotment.

The (*) indicates that the assessment had one or more indicator(s) rated moderate/extreme or extreme. These indicators are:

- Wind-scoured, Blowouts, and/or Deposition Areas
- Functional/Structural Groups
- Invasive Plants

These indicators by themselves are not enough to rate the site as not meeting a standard but may warrant future monitoring.

Recommendations:

RFOs Upland and Biotic Standard Assessment Summary Worksheet			
SITE 65065-SAND WELL #2-D112			
Legal Land Desc	NWNW 30 0120S 0310E Meridian 23	Acreage	4631
Ecosite	070BY061NM SAND HILLS CP-2	Photo Taken	Y
Watershed	13060007090 SHINNERY SANDS		
Observers	TRAUTNER, KETCHAM	Observation Date	10/05/2010
County Soil Survey	NM666 CHAVES SOUTH	Soil Var/Taxad	
Soil Map Unit	Rn	Soil Taxon Name	ROSWELL
Texture Class	NM666 FS	Soil Phase	ROSWELL-JALMAR
Texture Modifier	NM666 FINE SAND		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation		NOAA Growing Season Precipitation	
NOAA Avg Annual Precipitation		NOAA Avg Growing Season Precipitation	
Disturbances and Animal Use:	Moderate cattle use		

Part 2. Attributes and Indicators						
		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:						
S H	Water Flow Patterns					X
Comments:						

S H	Pedestals and/or Terracettes				X	
Comments:	Some pedestals or terracettes forming on sides of the dunes					
S H	Bare Ground				X	
Comments:	35% is the current estimate					
S H	Gullies					X
Comments:						
S	Wind-scoured, Blowouts, and/or Deposition Areas			X		
Comments:	blow outs and many dunes					
H	Litter Movement				X	
Comments:	some movement within blowouts in dunes					
S H B	Soil Surface Resistance to Erosion					X
Comments:	Estimated to be					
S H B	Soil Surface Loss or Degradation					X
Comments:						
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff			X		
Comments:	Loss of cover/composition of bunch grasses					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups				X	
Comments:	dominated by shrubs, subdominated by bunchgrasses					
B	Plant Mortality/Decadence					X
Comments:						
H B	Litter Amount					X
Comments:	50% is the current estimate					
B	Annual Production				X	
Comments:	Estimated to be 60% of potential production					
B	Invasive Plants					X
Comments:						
B	Reproductive Capability of Perennial Plants				X	
Comments:	Shinnery production may be suppressing grass production.					
S	Physical/Chemical/Biological				X	

	Crusts					
Comments:	Very little observed					
B	Wildlife Habitat				X	
Comments:	Good deer and pronghorn habitat, fair quail.					
B	Wildlife Populations				X	
Comments:	Good deer and pronghorn pops., fair for quail					
B	Special Status Species Habitat				X	
Comments:						
B	Special Status Species Populations				X	
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	0	1	3	6
H	Hydrologic	0	0	1	3	7
B	Biotic	0	0	0	7	6

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil		0	1	9
Hydrologic		0	1	10
Biotic		0	0	13

Site Notes: three awn, plains bristlegrass, bluestem, dropseeds, gramas, annual buckwheat, sand sagebrush, shinnery oak.

Thick shinnery oak.

RFOs Upland and Biotic Standard Assessment Summary Worksheet			
SITE 65065-SOUTH TRAP-D111			
Legal Land Desc	NWNW 21 0120S 0310E Meridian 23	Acreage	1385
Ecosite	070BY054NM SANDY LOAM CP-2	Photo Taken	Y
Watershed	13060007090 SHINNERY SANDS		
Observers	TRAUTNER, KETCHUM	Observation Date	10/05/2010
County Soil Survey	NM666 CHAVES SOUTH	Soil Var/Taxad	
Soil Map Unit	Im	Soil Taxon Name	IMA
Texture Class	NM666 FSL	Soil Phase	IMA
Texture Modifier	NM666 FINE SANDY LOAM		
Observed Avg Annual Precipitation		Observed Avg Growing Season Precipitation	
NOAA Annual Precipitation		NOAA Growing Season Precipitation	
NOAA Avg Annual Precipitation		NOAA Avg Growing Season Precipitation	
Disturbances and Animal Use:	Moderate cattle use.		

Part 2. Attributes and Indicators

		Departure from Ecological Site Description/Ecological Reference Areas				
Attribute	Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S H	Rills					X
Comments:						
S H	Water Flow Patterns					X
Comments:						
S H	Pedestals and/or Terracettes					X
Comments:						
S H	Bare Ground				X	
Comments:	Ecological site description = 35%, this location = 40%					
S H	Gullies					X

Comments:						
S	Wind-scoured, Blowouts, and/or Deposition Areas		X			
Comments:	Mesquite hummocks with dunes forming.					
H	Litter Movement					X
Comments:						
S H B	Soil Surface Resistance to Erosion				X	
Comments:						
S H B	Soil Surface Loss or Degradation				X	
Comments:	Soil loss has occurred on the A-horizon.					
H	Plant Community Composition and Distribution Relative to Infiltration and Runoff			X		
Comments:	Should have high cover in bunchgrasses					
S H B	Compaction Layer					X
Comments:						
B	Functional/Structural Groups		X			
Comments:	site is now dominated by shrubs, subdominated by grasses					
B	Plant Mortality/Decadence					X
Comments:	Dead mesquite due to past treatment. Expected at this level					
H B	Litter Amount			X		
Comments:	10% is the current estimate. Ecological site description indicate 30%					
B	Annual Production			X		
Comments:	Only 60% of potential is evident.					
B	Invasive Plants		X			
Comments:	Mesquite , but hasn't fully responded to the treatment. Recommend re-check in 2-3 years.					
B	Reproductive Capability of Perennial Plants					X
Comments:						
S	Physical/Chemical/Biological Crusts					X
Comments:	Physical crusts now present					
B	Wildlife Habitat				X	
Comments:						
B	Wildlife Populations				X	

Comments:	Deer good, quail fair.					
B	Special Status Species Habitat			X		
Comments:						
B	Special Status Species Populations			X		
Comments:						

Part 3. Summary

A. Indicator Summary - Each of the indicators are associated with one or more of the attributes below. An indicator is placed in a category (columns) above and summed for each of the Standard Attributes.

Standard Attribute		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S	Soil	0	1	0	3	6
H	Hydrologic	0	0	2	3	6
B	Biotic	0	2	4	4	3

B. Attribute Summary. In this table, the Extreme and Extreme to Moderate columns in the table above are merged for the *Does not Meet* column, Moderate becomes *May Need More Info*, and Slight to Moderate and None to Slight merge to form the *Meets* columns. Values from the table are summarized below. Space is provided for rationale of the determination. This space should most certainly be used when the determination by the ID team conflicts with the summarized values. Provide the sources of information that lead to the determination. X out the appropriate box for each attribute to denote final agreed upon determination by the ID team.

Attribute	Rationale	Does Not Meet	May Need More Info	Meets
Soil		1	0	9
Hydrologic		0	2	9
Biotic	Due to the impact or spottiness of the effectiveness of the mesquite treatment, influence of presence of mesquite on the biotic community is still apparent. Recommend followup treatment or spot checking the existing treatment over the next couple of years.	2	4	7

Site Notes: Dominated still by mesquite and snakeweed. Areas of good grass cover are present. Recheck to see if mesquite treatment was consistent. Some areas are dead, but other sites don't appear to be affected. A lot of re-sprouts are present. Follow-up on pretreatment conditions.

Species present at this location include dropseeds, plains bristlegrass, mushly, mesquite, snakeweed, 3 awn, sand sage and 4 wing saltbush.

Determination of Public Land (Rangeland) Health for 65065 UNDER THE HILL

The Record of Decision (ROD) for the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (dated January 2001) adopted three Standards for Public Land Health. These are (1) Upland Sites Standard, (2) Biotic Communities, Including Native, Threatened, Endangered, and Special Status Species Standard and (3) Riparian Sites Standard.

The ROD also established a process for the BLM Field Offices for implementation. Through a public participation process, the Roswell Field Office developed and adopted indicators to use in conjunction with existing monitoring data to assess these standards.

Field assessment worksheets and other available data that evaluate the local indicators were completed for this allotment. Based on theses assessments, it is my determination that the two pastures with public land within Under The Hill, allotment #65065, meet the Upland Sites standard and (2) Biotic Communities, including Native, Threatened, Endangered, and Special Status Species Standard. South Trap Pasture at evaluation meets the Upland or Biotic Standard but should be monitored. These factors are discussed in detail in the Causal portion of this report.

There are no public land Riparian areas on this allotment, therefore this standard was not addressed.

The soil within Sand Trap pasture is primarily sand and deep sand that has a low water holding capacity/water availability. During drought conditions deep tap-rooted mesquite out-competes fibrous rooted herbaceous plants for available water. This characteristic along with continuing utilization of forage in Sand Trap Pasture during drought conditions has impacted plant recovery.

Herbicide application to reduce mesquite in this pasture has been performed in June of 2008. In addition a two growing season deferment has been implemented for Sand Trap Pasture. In order to continue the improvement within Sand Trap Pasture, the following guidelines are being implemented:

Sand Trap Pasture will be totally deferred from grazing use for at least the following two growing seasons after herbicide treatment. This as per the Cooperative Agreement.

During the interim, field observations for this allotment to evaluate the vegetative response and range condition will continue. A line-intercept pre-treatment mesquite transect was established in 2008 to monitor the effectiveness of 2008's brush treatment.

In addition, consultations with the allotee will be first and foremost in establishing time frames and grazing rotation schemes to track this allotment's progress, particularly that for Sand Trap Pasture.

This serves as portion of our corrective actions and identifies those causal factors.

/s/ J. Howard Parman — 01/11/2011

Assistant Field Manager — Date